



CTSpace

A Strategic Approach to Closing the Collaboration Gap in Capital Intensive Programs

EXECUTIVE SUMMARY

For a great number of organizations operating in complex capital environments, the inability to effectively communicate with a geographically dispersed group of organizations is resulting in poor performance with regards to cost, schedule and scope.

However, the root cause of this breakdown in communications is not a lack of project management technology adoption, as many have previously believed. It is also not just a lack of good document management systems. Fundamentally, it is about organizations':

- inability to standardize and enforce critical business processes, and
- inability to provide program executives with actionable information to make better project and program decisions

Addressing this complex problem requires a practical solution that can help manage critical project documentation, standardize and enforce business processes and workflow across organizational and geographical boundaries, and provide relevant metrics and key performance indicators to all internal decision makers.

Commonly referred to as enterprise content collaboration (ECC), this next-generation, strategic approach to project and program collaboration can provide organizations with a 30 to 60 percent reduction in overall project communications time, reduced project costs, accelerated cycle times and 5 percent faster project completion.¹

A BREAKDOWN IN COMMUNICATIONS

Capital-intensive programs have, by definition, an innate complexity that makes their management and execution particularly challenging. Projects within these programs typically involve the deployment of many resources, including development, design, engineering, construction and manufacturing across multiple organizations.

They also require effective coordination of partners, design and engineering firms, contractors and subcontractors in multiple geographies and time zones, with enormous requirements for modifications and updates that must be synchronized among all relevant stakeholders.

In short, seamless communications and collaboration are paramount to project and program success, making project execution as much, if not more, of a challenge than the project itself.

Unfortunately, for a great number of organizations operating in these complex environments, the inability to effectively communicate with a geographically dispersed group of organizations is resulting in poor performance with regards to cost, schedule and scope.

Symptoms of this communications breakdown include cost overruns, excessive change orders, project delays, inefficiencies, quality issues and disputes among project participants. The costs are not only staggering, they are also climbing rapidly. In fact, according to the National Institute of Standards and Technology, inadequate interoperability and communications in the design and construction life cycle costs the industry at least \$15.8 billion per year, of which a whopping two-thirds is borne by owners and operators.²

But the real reason for the breakdown in communications is not a lack of project management technology adoption, as many have previously believed. It is also not a lack of good document management. Document management is, no doubt, essential. But thousands of organizations that have adopted document management systems still suffer from problems that can be immediately traced to poor communications.

Besides document management, the communications problem in design and construction also requires that organizations:

- gain control of communication business processes both inside and outside the organization, and
- deliver actionable information to program executives that enables them to make better project and program decisions.

DOCUMENT MANAGEMENT: A NECESSARY FOUNDATION

Most project communications today are created and managed externally, outside an organization's firewall. With projects continuing to grow in scope and complexity, the ability to gain better control over how these communications are created and handled - both internally

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among departments and externally among business partners and key players - is directly tied to project and program success.

Yet most organizations today lack the software environment and IT resources necessary to control communications business processes externally in a complex, geographically dispersed environment.

Over the last 10 years, many owners and contractors have worked to address the symptoms of poor communications by tackling their internal document management problems. Thousands have adopted document management systems or created FTP (file transfer protocol) sites to more easily share project documents internally between the corporate office and project management.

Optimizing document control and management internally among departments and functional groups is essential, but it is only one variable in the overall communication process.

In fact, shifting the tens of thousands of documents and reams of data from paper to digital formats can even create another set of problems. The mix of applications used by project participants to create, manage and store digital documents and data typically runs into the dozens, with each application having its own format and data requirements. This makes it difficult, if not impossible, for every project participant to be able to see, much less modify project documentation and data.

The result is a veritable Tower of Babel of conflicting and incompatible formats that, without the right solution, can erase many of the efficiencies the organization may realize through the digitization of the document management function.

BUSINESS PROCESS MANAGEMENT MAKES DOCUMENT MANAGEMENT WORK

To close the collaboration gap, organizations must move beyond mere document management and begin addressing their communications business processes with outside providers.

Within the context of collaboration, business process management enables an organization to define and enforce workflows that create action items, assign responsibilities, provide a historical record and store valuable project content all in one place. It also entails the ability to create and customize not just the workflow itself but also the forms that will be used in each process so that all of the information that is needed can be captured.

The constantly evolving nature of large-scale project work means that the key business processes - and the roles individual users have in their success - need to be closely managed and tracked. This is particularly the case with project documents and data. Changes, modifications and approvals have to be routed to an ever-shifting set of individuals, depending on the project's status. And documents such as RFIs (Requests For Information) need to be handled appropriately and expeditiously in order to avoid project delays.

In fact, even the simplest items in a capital project can involve a complex web of steps and rules, according to a project liaison with one of the largest energy companies in the Mid-Atlantic:

"For instance, if an individual working in one of our projects questions an item, he has to create an 'action required' document specifying if the action required is a change request, affects the schedule, has a cost impact and so on.

"From there, it goes to the project manager; he either approves it or rejects it. If he approves it, it goes to an outside partner to determine what they can do to change what the project manager is requesting. If our partner approves the request, it has to indicate whether or not a change order will be required.

"It then comes back to the project manager, who looks at the resolution and either agrees with it or not. If he agrees with it, he has to send it back to the individual who created the request. If that individual concurs with the recommendation, the action item goes back to the project manager so he or she can give the final approval to create a change order, should one be needed, triggering a change order process with its own set of steps and business rules."

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BUSINESS INTELLIGENCE: MAKING THE DATA ACTIONABLE

Many document control tools and project collaboration systems excel at generating and storing an enormous amount of documents and related project data. But construction organizations today don't necessarily need more data. In an environment of fast-track schedules and growing complexity, time-starved program executives need improved real-time visibility. They need metrics and easy-to-use analytical tools that enable them to quickly and easily identify opportunities, potential problems and root causes.

That's where business intelligence comes into play. The third layer in the communications puzzle, business intelligence functionality translates the raw, day-to-day "transactional" data into meaningful, actionable information.

Through intuitive, graphical dashboards, decision makers can navigate through information in any direction, making the data more meaningful. And using prebuilt reports and proactive alerts, project team members are able to monitor key project metrics and KPIs (Key Performance Indicators) in real time, leading to improved decision making, increased responsiveness and greater employee accountability.

For instance, KPIs such as "RFI days outstanding" quickly "net out" average turnaround time on answering important questions submitted by the general contractor. Red-light indicators quickly alert the owner or design firm when those responses are reaching unacceptable levels, so that corrective action can be taken and project delays averted.

At the end of the day, improved visibility and transparency into project and program health helps close the collaboration gap by enabling program executives to focus more time on more strategic activities and less time on tactical "fire-fighting."

WHY ALL THREE PIECES ARE CRITICAL AND INTERCONNECTED

The challenges faced by today's owners, contractors, and design and engineering firms demand robust document management along with practical technology that can standardize and enforce business processes and workflow across organizational and geographical boundaries. They also require a business intelligence layer that can help decision makers at all levels quickly pinpoint problems and opportunities. Only then can organizations finally tackle the costly communications problem and begin to close the collaboration gap.

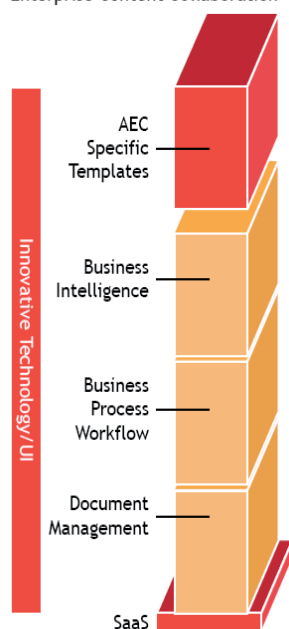
This is a critical point because effective collaboration in the design and construction life cycle has never been such an important, strategic requirement. In fact, according to research conducted by InfoTrends/CAP Ventures, improving collaboration inside and outside the organization and improving the standardization and enforcement of business processes are two of the most critical issues facing owners—not just because of their implications, but also because these are among the most solvable issues facing construction organizations and program owners.³

With 40 to 50 percent of projects today, on average, running behind schedule and over budget,⁴ closing the collaboration gap across organizations and geographies is no longer a contractor problem. It is a strategic owner imperative - one that can yield a true and sustainable competitive advantage, especially in industries marked by fierce competition, commoditization and depressed margins.

Closing the collaboration gap means that an organization can, for example, transform a 12-step process to a five-step process while compressing the cycle time for each of the remaining five steps. It ensures a higher level of process consistency and discipline in a standardized and

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Enterprise Content Collaboration



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centralized environment. And as the process is repeated thousands of times across multiple projects, real, tangible benefits - especially those impacting cost, schedule and scope - quickly surface.

Fortunately, the past few years have changed many companies' orientation toward this critical business issue. The introduction of next-generation on-demand, integrated software solutions that combine robust document management with business process functionality and business intelligence analytics has ushered in a new era for capital program management.

ENTERPRISE CONTENT COLLABORATION: A STRATEGIC, INTEGRATED APPROACH

Commonly referred to as "Enterprise Content Collaboration" (ECC), this next-generation, strategic approach to project and program collaboration enables organizations to standardize and enforce how business is going to be conducted across the enterprise while providing the necessary transparency into project and program health to enable sound decision making.

Combining document management, business process management and business intelligence into an integrated stack—and delivered via an SaaS (software as a service) platform - represents a fundamental shift in how parties interact and communicate in the design and construction life cycle. Yet organizations that have deployed these fully integrated collaboration solutions can expect significant strategic benefits such as:

- Project communications cycle times improved by 30 to 60 percent by automating collaboration between engineers, architects, contractors and other partners⁵
- Capital-project completions of up to 5 percent faster by accelerating and better managing the exchange of information both inside the organization and externally with key business partners⁶
- Reduced risk and improved regulatory compliance through a complete audit trail of document sign-offs, milestones, inspections, closeouts and other critical documents
- Standardized best practices across programs through the ability to replicate the most effective processes, policies and procedures across the organization
- Improved visibility, control and problem diagnosis in the design and construction phases of the project to avoid delays and track escalating budgets within projects

A TRADITIONALLY DIFFICULT PROBLEM TO TACKLE

Considering the high gains that can be achieved by integrating these three critical layers, why aren't more organizations addressing this crucial issue? One reason is that enforcing processes externally with dozens, if not hundreds, of external partners is a challenge. It requires the involvement and cooperation of external parties.

True collaboration is a human activity, not something undertaken by computer systems alone. Technology, while essential, is simply an enabler that provides a platform for collaboration. When an organization makes attempts at tackling the business process issue, it is also trying to change the way external organizations, and the people working in them, conduct business. It is a cultural issue first, a technical challenge second.

Outside the human element, there have also been technological barriers to solving the issue. Research conducted by independent consulting group EAC reveals that while a large amount of data and documentation relevant to project execution may already be part of an existing software implementation, most of these systems cannot provide the required document management and business process fusion needed to significantly improve execution and overall efficiency.⁷

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Moreover, enterprise systems that can provide some degree of combined document management and business process management almost always lack the third level of functionality: business intelligence. In most cases, adding that analytical layer involves costly and time-consuming customization or investing in an overly complex business intelligence platform.

ENSURING SUCCESS

Fortunately, organizations considering this strategic shift into an ECC platform now have the luxury of looking to companies that have already successfully closed this critical collaboration gap. Based on their experiences, the following considerations can serve to supplement existing criteria when evaluating potential options and approaches:

Ability to be deployed across the extended enterprise.

Although organizations can expect to derive incremental value from implementing an ECC solution in a large capital project, the more strategic, far-reaching savings and benefits come when such systems are extended across the enterprise. As such, organizations should look for solutions that can scale to thousands of users and across geographical boundaries - specifically, solutions that are built to deliver the most value at an enterprise level.

Business process management across organizational and geographical boundaries.

The right solution must not only provide standard, ready-to-deploy graphical workflows but also have the ability to easily customize and enforce these workflows to the way an organization does business.

And since construction involves the constant establishment and disbanding of teams based on current company needs and projects, the solution should also easily accommodate any necessary business process changes from one project to another—on the fly, without incurring development costs and without a need to write code. The right solution must also specifically enable the assignment of action items and due dates, provide progress tracking on individual items, and enable alerts and notifications - for both internal teams and external business partners.

Central storage facility for all project data and documentation.

Capital projects can succeed only when there is a reliable and accurate “single version of the truth” for the project’s documents and data. The best way to achieve this in a cost-effective fashion is to employ a solution centered on a single central storage model and delivered on demand.

On-demand applications provide a level of enterprise-class security, availability and performance that would require unacceptably high capital investments to match. Moreover, on-demand applications eliminate up-front capital investments and involve radically faster deployments.

In fact, a recent study by TripleTree and the Software & Information Industry Association found that on-demand deployments are 50 to 90 percent faster and entail a total cost of ownership that is five to 10 times lower than that of installed software.⁸

Ability to customize dashboards to each user’s needs.

Providing users with key metrics on project performance can be extremely valuable. But if the data is not relevant to the user’s role and not presented in a clear format - or if the necessary actions are not within the user’s immediate sphere of influence, corrective measures will not be taken. Therefore, the ideal solution should include customizable dashboards that display KPIs and metrics relevant to the user’s role, enable drill-down analysis and enable decision makers to take immediate corrective action when necessary.

**THE RIGHT SOLUTION
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Support for hundreds of data formats.

This is a key requirement for supporting a widely disparate user base scattered across headquarters, field offices and project sites. In particular, this capability must be provided without requiring that users have in their systems the native applications in which all documents have been created.

Sophisticated management, audit and archiving system.

This requirement not only satisfies internal management and audit needs but can also be essential to meeting regulatory compliance in a number of vertical markets.

Secure multitiered access.

The centralization of project data and documentation brings with it the problems of increased vulnerability, particularly to highly sensitive or classified information. The ability to provide a high level of security at the user and organizational levels is an absolute necessity.

Support for multiple languages and global project environments.

For organizations with global capital programs, the ability to drive effective and secure communications across multiple cultures, languages and time zones is paramount. The right solution must be able to be deployed quickly and easily anywhere in the world. It must also provide a platform where everyone can access documents and collaborate in real time across geographies.

Full executive sponsorship and commitment.

Securing executive sponsorship is absolutely essential to successfully closing the collaboration gap. Executive sponsorship helps reinforce corporate vision and creates unity across teams, organizations and cultural lines. A committed executive can set the standard for project success. He or she has the authority to allocate resources, remove obstacles, handle contingencies and drive key decisions that can ensure a successful implementation.

The right implementation and training team.

The team implementing the new technology should have deep experience in the design and construction industry, employ a comprehensive and prioritized implementation plan, provide adequate training for employees at all levels, and possess the authority and capacity to keep the project on track.

Change management program running in parallel.

Organizations that are engaged in a true collaborative effort internally and with their key external partners recognized from the beginning that effective change management would be critical to the initiative's success. These organizations purposely implemented change management initiatives alongside their technology deployment to ensure that the investment in systems and people improved performance and delivered a positive return.

Quick wins.

Quick wins are vital to ensuring program success. They build momentum, which generates belief, confidence and less resistance to change. That is why engaging and educating innovative and forward-thinking end users from the very beginning is so important. These users can act as a springboard to winning the hearts of the more skeptical and resistant team members by engendering the quick wins necessary to eliminate doubt and fear.

CONCLUSION

The biggest reason for the breakdown in communications in capital-intensive projects is not a lack of project management technology adoption. It is also not a lack of good document management. Fundamentally, it is a business process problem both inside and outside the

organization, combined with poor, real-time visibility into project and program performance.

Enterprise Content Collaboration solutions that integrate secure document management, automated business process management and business intelligence - across the enterprise and externally with business partners - can enable organizations to close the collaboration gap in the design and construction life cycle. Organizations that have embarked on this strategic initiative have seen project communications cycle time improvements of 30 to 60 percent, capital-project completions up to 5 percent faster, reduced risk, lower costs, improved visibility into project health and increased project control.

ABOUT SWORD

SWORD is the leading provider of strategic enterprise content collaboration (ECC) solutions that help companies accelerate project completion and improve program health by closing the collaboration gap in capital-intensive programs. Working together on an SaaS (software as a service) platform and through an intuitive graphical interface, the company's next-generation document management, business process management and business intelligence solutions have been deployed and are used globally by more than 100,000 professionals in market-leading companies across such industries as oil and gas, retail, energy, life science and engineering. For more information, call 415 882 1888 or visit www.CTSpace.com.

¹ Wesek, J., Cottrez, V., Landler, P. "A Benefits Analysis of Online Project Collaboration Tools within the Architecture, Engineering and Construction Industry. PricewaterhouseCoopers. www.pwc.com.

² Gallager, M. and O'Connor, A. "Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry." U.S. Department of Commerce and National Institute of Standards and Technology. August 2004.

³ Franke, J. and Maziarka, M. "Dynamic Content Software Strategies." InfoTrends/CAP Ventures. June 17, 2005. www.capv.com.

⁴ Bridgers, Mark and Napier, Mark. "FMI/CMAA Sixth Annual Survey of Owners." 2005. www.fminet.com.

⁵ Wesek, J., Cottrez, V., Landler, P. "A Benefits Analysis of Online Project Collaboration Tools within the Architecture, Engineering and Construction Industry. PricewaterhouseCoopers. www.pwc.com.

⁶ Ibid.

⁷ Greenbaum, Joshua. "Content-Process Fusion: Collaborating for Project Efficiency and Effectiveness." Enterprise Applications Consulting (EAC). Spring, 2005. www.eaconsult.com.

⁸ "Software as a Service: Changing the Paradigm in the Software Industry." Triple Tree and the Software and Information Industry Association. July 2004. www.SIIA.net.

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